

MISSOURI DEPARTMENT OF NATURAL RESOURCES
RECOMMENDED REVISIONS
MISSOURI'S DAM AND RESERVOIR SAFETY LAW
February 8, 2006

HISTORY: The Missouri Dam and Reservoir Safety Law (Sections 236.400 – 236.500 of the Revised Statutes of Missouri) was passed on September 28, 1979. The first set of rules and regulations (10 CSR 22-1.010 – 10 CSR 22-4.020) were adopted on August 13, 1981. There have been no significant changes to the law since its enactment.

Dams that are regulated under the law are defined as any artificial or man-made barrier which does or may impound water, and which has a surface area of fifteen or more acres of water at the water storage elevation or which is 35 feet or more in height from the natural bed of the stream or watercourse measured at the downstream toe of the barrier or dam. Specifically exempted from the law are dams not over 35 feet in height and dams licensed and operated under the Federal Power Act. Also specifically exempted from regulation under the law are “agricultural dams” which are defined as any dam constructed to impound water for use in irrigation, livestock watering, or commercial fish rearing and sale. Dams constructed for soil and water conservation or irrigation or relating to wildlife conservation are exempt from certain permitting requirements of the law.

A Dam Safety Task Force was convened in 1999 to review Missouri's Dam and Reservoir Safety Law. The Task Force included members from federal and state agencies, consulting engineers, contractors, industry, dam owners, and non-governmental organizations. There was considerable support for lowering the height of dam to be regulated from 35 feet to 25 feet and including storage volume as part of the definition. The Task Force never presented a final recommendation.

Currently in Missouri, the Department of Natural Resources regulates 600 dams under the law. In addition to dams under 35 feet in height, the department is aware of 54 exempt agricultural dams and five exempt Federal Power Act dams that would otherwise be regulated.

MODEL DAM SAFETY LAW: The Federal Emergency Management Agency (FEMA) has adopted model dam safety law standards to be used in evaluating the various states' dam safety programs. In the model law, “dam” is defined as any dam that is at least 6 feet in height with a maximum storage of at least 50 acre-feet or 25 feet in height with a maximum storage of at least 15 acre-feet. Using these criteria to develop the National Inventory of Dams (NID), the current NID shows Missouri as having 4854 dams. It is important to note that the inventory was compiled using 1980 data, so this figure may be significantly less than the actual number of dams meeting these criteria in Missouri. Additionally, Missouri's Dam Safety Law does not require dams less than 35 feet in height to be reported for inventory purposes. Accordingly, numerous dams may have been built in Missouri since 1980 that are not included in the NID. It is estimated that the number of dams shown in the NID for Missouri could be under estimated by as much as 30% or more.

COMPARISON OF MISSOURI LAW TO SURROUNDING STATES:

- The definition of “dam” varies in the surrounding states as well as across the nation. However, the majority of definitions include both the dam height and the maximum storage volume in the reservoir as part of the definition.

- All of the surrounding states regulate all “high hazard” dams in their states.
- Missouri inspects all dams it regulates. Some surrounding states “regulate” dams but do not inspect them.
- The majority of states that do inspect their regulated dams do so with state engineers at no cost to the dam owner. However, some states do charge a fee to cover a portion of the costs of inspections.
- The inspection frequency is directly related to the hazard classification of the dam and varies between 1 to 5 years per inspection. The high hazard dams are inspected at least every 1 to 2 years with the significant and low hazard dams being done every 3 to 5 years.
- Tennessee is the only surrounding state that has an agricultural exemption.
- The surrounding states are about equally divided on the issue of exempting federally owned or regulated dams.
- Hazard classification varies between states with most having a definition similar to what is found in the Model Dam Safety Law. A comparison of the Model Law hazard classification system with Missouri’s hazard classification is as follows:

Model Law:

High Hazard – Loss of one or more human life is probable or expected.

Significant Hazard – No loss of human life expected but economic, environmental, and lifeline losses are expected.

Low Hazard – Economic, environmental and lifeline losses are low and generally limited to the dam owner’s property.

Missouri Law: (as promulgated by regulations)

Class 1 – Downstream of the dam contains at least 10 or more permanent dwellings or any public building.

Class 2 – Downstream of the dam contains 1 to 9 public dwellings or 1 or more campgrounds with permanent water, sewer and electrical services or 1 or more industrial building.

Class 3 – No lives, campgrounds, public dwellings, public buildings or industrial buildings are threatened from a dam failure.

RECOMMENDED REVISIONS TO MISSOURI DAM AND RESERVOIR SAFETY LAW

- **Definition of “dam” and “dams to be inspected”**

Change the definition of “dam” to read as follows: Any artificial or manmade barrier which does or may impound water and is at least six feet in height with at least fifty acre-feet of storage at the dam crest elevation or at least twenty-five feet in height with at least fifteen acre-feet of storage at the dam crest elevation.

Require all high hazard and significant hazard dams that are at least twenty-five feet in height or have at least fifty acre-feet of storage at the dam crest elevation be inspected at least every five years, or more frequently if deemed necessary for safety purposes, by a licensed professional engineer with experience in the design and construction of dams and registered in Missouri. Require owners of low hazard dams to self inspect their dams and submit an inspection report at least every five years.

- **Change hazard classification of dams as follows:**

“High hazard” – loss of one or more life is probable or expected if the dam should fail.

“Significant hazard” – no loss of human life is expected but significant economic, environmental, and lifeline losses are expected should the dam fail.

“Low hazard” – economical, environmental and lifeline losses are low if a dam fails.

- **Exemptions:**

The current agricultural exemption should be eliminated. (See 236.435.6 RSMo)

The current exemption of those dams regulated under the Federal Power Act should be eliminated. (See 236.400.(5) RSMo)

Eliminate the exemptions for the dams constructed for soil and water conservation or irrigation or relating to wildlife conservation. (See 236.435.7 RSMo)

IMPACTS FROM RECOMMENDED REVISIONS

- Currently the State of Missouri regulates 600 dams. By changing the definition of a dam and removing the exemptions, Missouri would regulate, in some form, approximately 5,000 dams.
- It is estimated that there are approximately 1,500 “high hazard” dams, 1,300 “significant hazard” dams, and 2,200 “low” hazard dams that would be regulated.
- Currently the Dam and Reservoir Safety Program (Program) inspects all regulated dams regardless of hazard class and reviews all engineering designs of proposed dams. Under the recommended revisions, the state would only inspect “high and significant hazard” dams. Owners of “low hazard” dams would be asked to submit a data sheet after completion of their dam and periodically provide a self-inspection report to the Program.
- It will be necessary to promulgate rules to implement details of a statutory change.